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(56) Documents Cited

GB 2282797 A EP 0676763 A2 EP 0503171 A1

US 4895252 A US 4623062 A

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INT CL<sup>6</sup> B65D, G11B 33/04

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## (54) Compact disc holder

(57) A one-piece vacuum formed plastics CD holder (1) comprises a base (2) having an upstanding hub (7) adapted to fit into the central hole in a CD. The hub (7) is shaped to flex radially inwardly when a CD having a central hole less than the diameter of the hub (7) is fitted thereon, to firmly retain the CD in position in the holder (1). In one embodiment, the base (2) of the holder (1) has two hubs (7,7a) upstanding from it for mounting two CD's side by side or in an overlapping relationship.

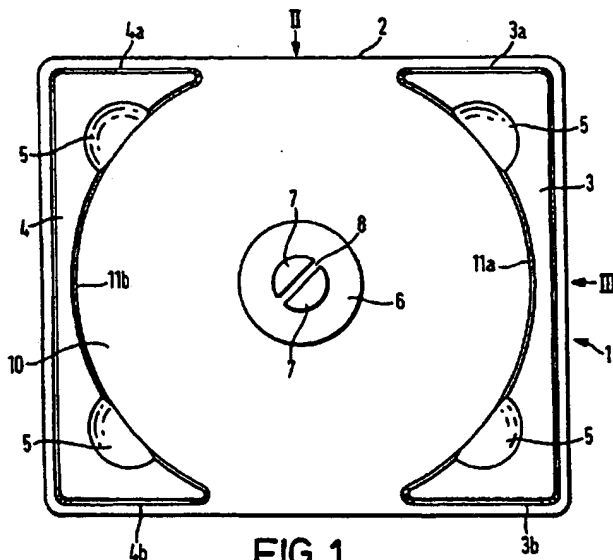


FIG. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

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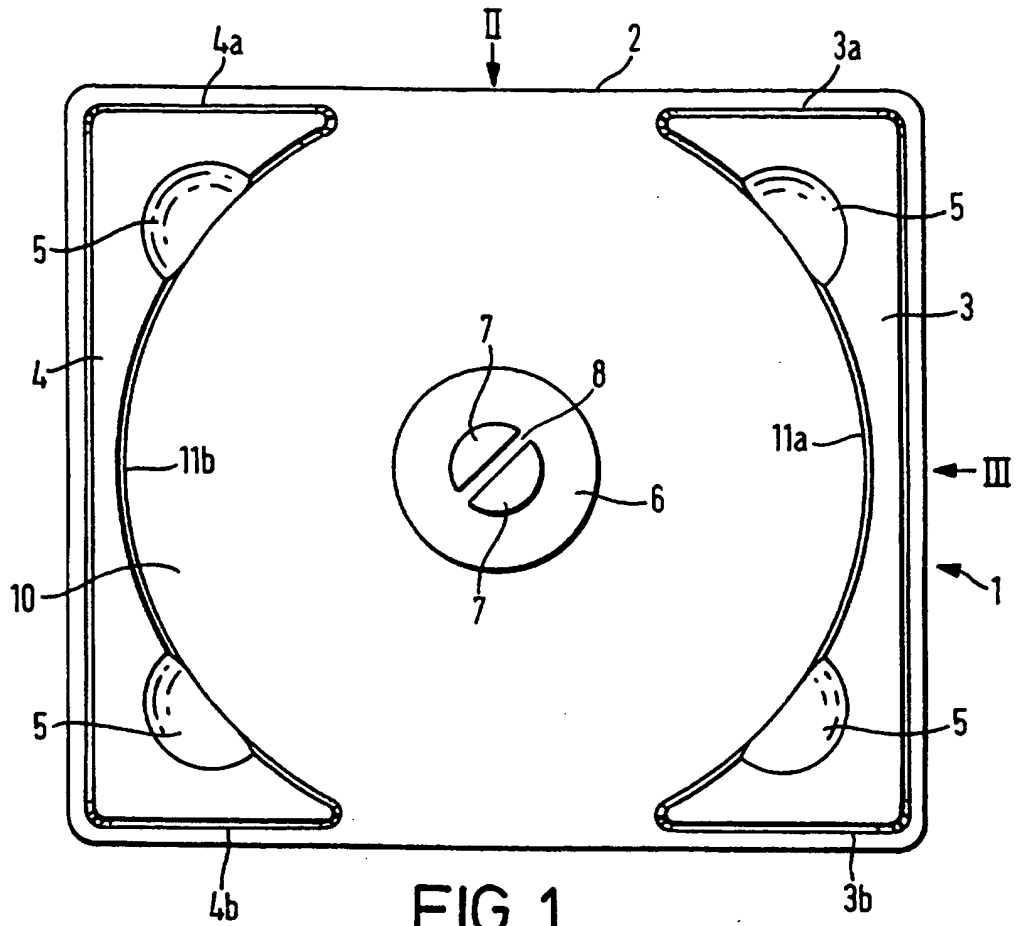


FIG. 1

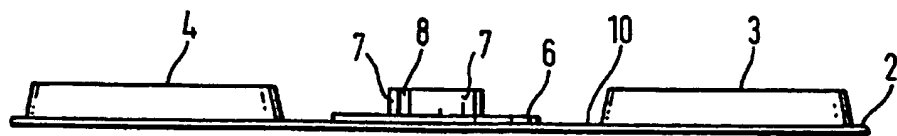


FIG. 2



FIG. 3

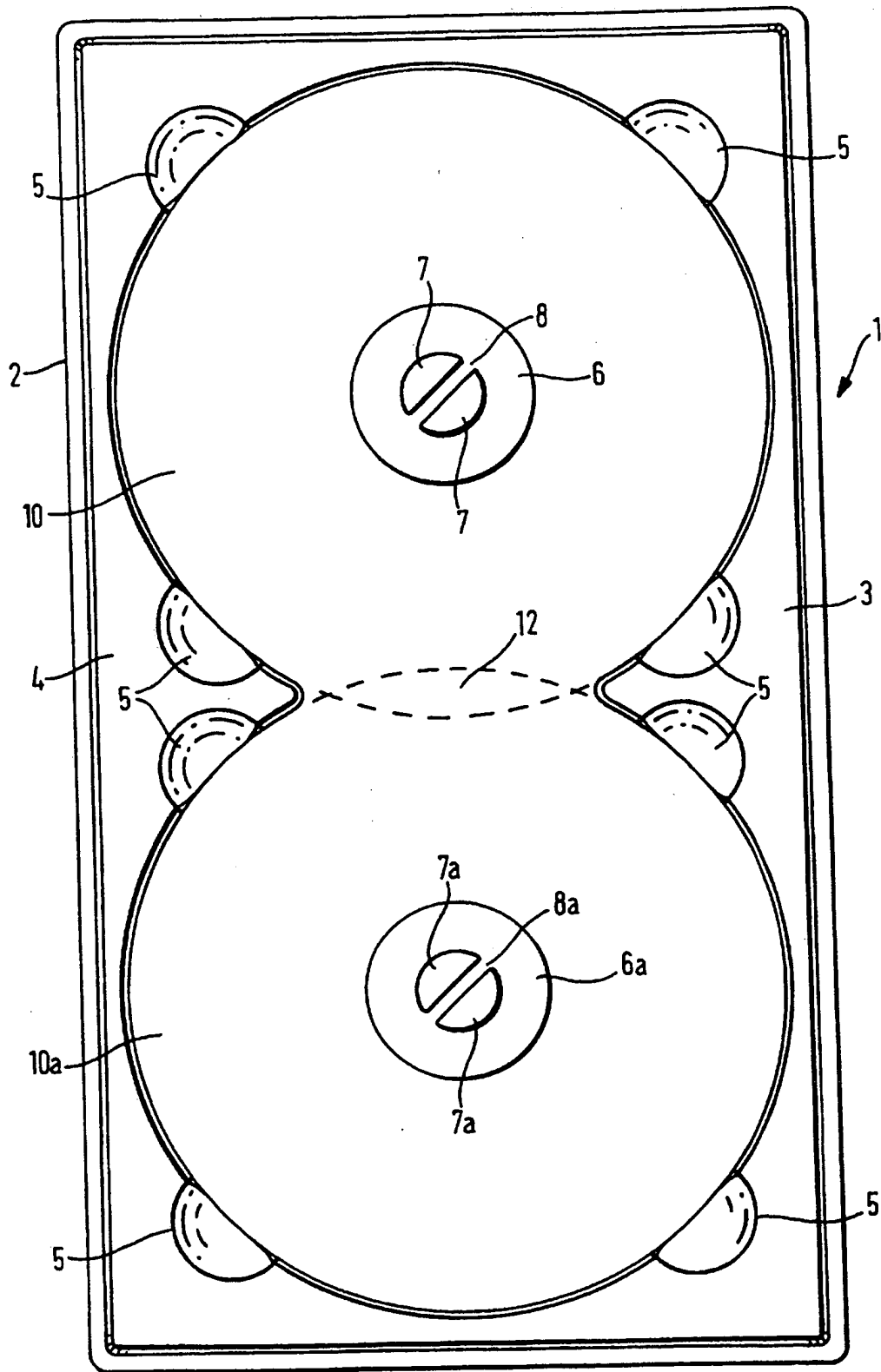


FIG. 4

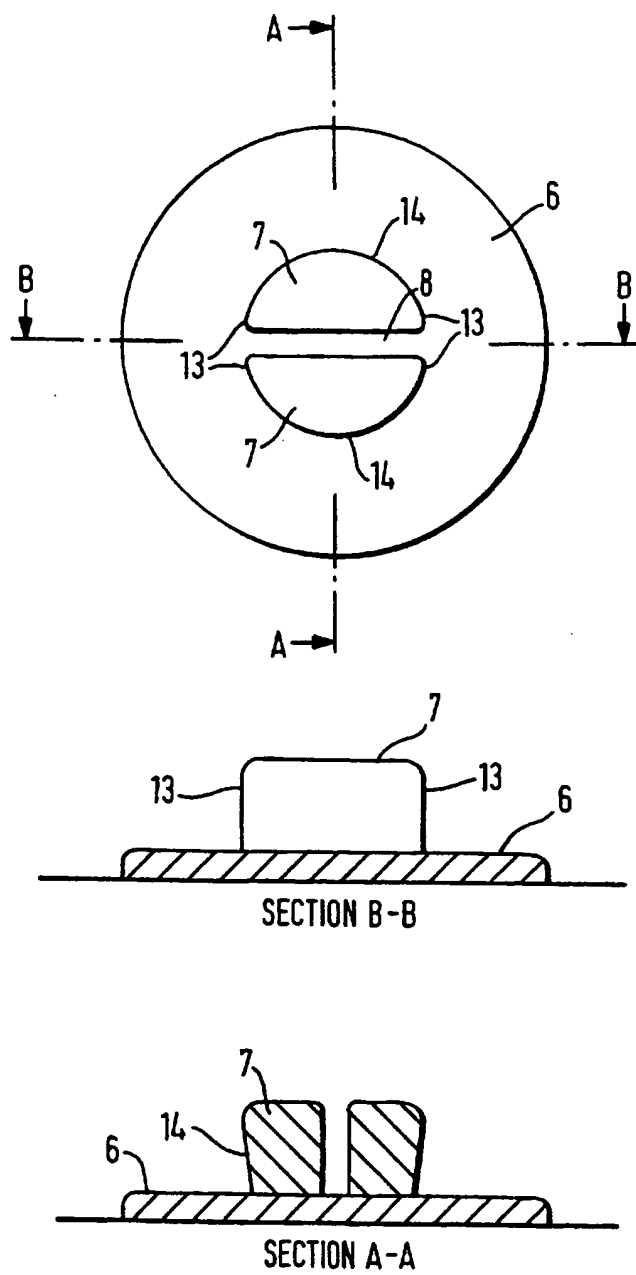


FIG. 5

COMPACT DISC HOLDER

This invention relates to a holder for compact discs, referred to hereafter as CD's.

5 CD's are generally sold in a clear plastic box with an injection moulded holder with the CD fitted therein. The holder usually has a circular recess formed in it to accept the CD which is mounted in the recess on a centrally located upstanding hub. The hub is normally  
10 formed from a number of inwardly directed separate resilient fingers having an end region which defines a hub which fits into the central hole in the CD, the fingers flexing to accommodate any tolerance in the size of the central hole which can vary quite considerably  
15 from one CD to another. A major problem with CD holders of this type is that the tooling costs are very high because they are made from an injection moulded plastics material and the flexible fingers tend to break off after repeated use.

20

To provide variety, CD's have been sold in paper or cardboard boxes but usually with injection moulded CD holders so they still suffer from the problems above. However, such packs offer considerable presentational  
25 flexibility but at a price close to that of a standard pack.

It is an object of the invention to provide a CD holder

which overcomes or substantially reduces the above disadvantages and in particular reduces tooling costs and holds the CD more firmly in position.

5 According to the present invention there is provided a one-piece vacuum formed plastics CD holder for storing a CD therein, the holder comprising a body having a centrally located upstanding hub adapted to fit into the central hole in the CD, the hub being shaped to flex  
10 radially inwardly when a CD is fitted thereon whose central hole has a diameter less than the diameter of the hub.

Preferably the hub has a slot formed in it which extends  
15 across the whole width thereof. In another embodiment, the hub has a second slot formed in it extending across the whole width thereof and intersecting the first slot. Suitably the or each slot is formed in the hub at  $45^\circ$  to the major axes thereof. Alternatively, the hub can be  
20 formed with more than two slots in it.

Preferably, the side surfaces of the hub are undercut. In a preferred embodiment, the two opposed side surfaces facing the slot are undercut to allow the slot to close  
25 during CD removal whereas the undercut gradually reduces to zero on the two other opposed faces of the hub at  $90^\circ$  thereto and in line with the slot.

Preferably the top circumferential edge of the hub is also chamfered to assist in locating the CD thereon.

Suitably the holder is moulded from a high impact  
5 polystyrene material but other materials such as PP, PET, HDPE, ABS or PVC could be used.

The present invention also relates to a holder for mounting two CD's side by side to each other. In one  
10 embodiment, the base is formed with two upstanding hubs on it, each surrounded by a CD supporting section which spaces the CD from the base, the hubs being separated from each other by a distance whereby the CD's are housed in the base with a space between their perimeters.  
15 Alternatively, the two hubs are spaced apart by a distance whereby their perimeters can overlap in which case, the annular CD supporting section around one hub is made to be slightly thicker or higher above the base than the other so that the overlapping edges of the two CD's  
20 can overlie each other.

Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

25

Figure 1 is a top plan view of a CD holder of the invention;

Figure 2 is a view of the holder of Figure 1 in the

direction of arrow II;

Figure 3 is a view of the holder shown in Figure 1 in the direction of arrow III;

Figure 4 is a top plan view of an alternative embodiment  
5 for storing two CD's; and

Figure 5 shows various views of the hub shown in Figures 1-4.

Referring now to Figures 1-3 of the drawings, there is  
10 shown a CD holder which is vacuum formed from a high impact polystyrene material. The material can be of any colour and made from either pure or recycled material. Preferably the material is 1000 micron high impact polystyrene but 750 micron high impact polystyrene can be  
15 used.

The CD holder 1 comprises a flat base 2 with two upstanding side portions 3,4 formed thereon along opposite sides of the base 2. Each side portion 3,4 has  
20 an arcuate portion 11a,11b which extends between edges 3a and 3b and 4a and 4b respectively. The side portions 3,4 are spaced apart to define a circular recess 10 to accept a CD therein. Each side portion 3,4 also has a pair of recesses 5 formed therein as illustrated to enable the CD  
25 (not shown) to be lifted from the recess 10 in the holder 1.

An upstanding cylindrical hub 7 is formed centrally on



the base 2 and has a slot 8 extending diametrically across its width at an angle of 45° to the major axes of the hub for reasons which will be explained hereafter. The central hub 7 is surrounded by an annular CD supporting section 6 which is raised slightly above the surface of the base 2 to space the CD therefrom.

Referring now to Figure 4, there is shown an alternative embodiment of the invention in which two CD's are stored side-by-side. In the construction illustrated, it will be noted that the outer edges of the CD's (not shown) when fitted in the circular recesses 10,10a will overlap each other in the region 12 so the annular CD supporting section 6a around the hub 7a is moulded to be slightly higher above the base 2 than the annular CD supporting portion 6 around the other hub 7. This allows the CD on the hub 7a to be held in a position which is above the CD stored on the hub 7 so there can be no interference between the two stored CD's and thus damage thereto is avoided. It should be noted that it is not essential that the CD's be stored in the illustrated overlapping way although this is normally done to reduce the overall length of the CD holder as a whole. The CD's could instead be stored in the base with a small space between their peripheral edges in the region 12 by simply moulding the holder 1 shown in Figure 4 so that the hubs 7,7a are further apart.

A most important aspect of the present invention is the configuration of the central hub 7 with its diagonal slot 8 formed therein because the slot 8 allows the two halves of the hub 7 to flex inwardly towards each other when a CD is mounted thereon whose central hole has a diameter slightly less than that of the hub 7.

Figure 5 shows the hub 7 in more detail and it can be seen that ends 13 of each half 7 of the hub are vertical and at right angles to the CD supporting section 6 whereas the sides 14 are undercut relative thereto. The undercut 14 increases progressively from nothing on section line A-A to a maximum on section line B-B. This configuration has two advantages. Firstly, it enables the holder 1 to be easily removed from the vacuum forming tool (ejection from a tool with an undercut all the way round the hub 7 would be much more difficult requiring a much more expensive tool) and secondly, if the undercut 14 extended all the way round the hub 7, it would make removal of a CD therefrom difficult in one direction. Because the degree of undercut 14 in the CD holder of the present invention progressively increases when a CD is pushed over the hub 7, the gap 8 closes sufficiently to allow the CD to clip on to it and it also allows for a degree of tolerance in the size of the central hole in the CD to be taken up when the CD is removed. It should be noted that the orientation of the finger recesses 5 in relation to the hub 7 and the slot 8 therein is important

in that two of them need to be at substantially 90° to the slot to allow it to close up as the CD is removed whereas the other two need to be in line with the slot 8 for the maximum effect. The finger recesses 5 could however be  
5 located in different positions but removal of the CD would not be so efficient.

Because the holder 1 is vacuum formed from a relatively thin polystyrene material, there is sufficient  
10 flexibility in the material in combination with the slot 8 to permit the required radial inward movement. This resilience also serves to hold the CD more firmly in position on the hub 7 after the CD has been mounted on it which is a substantial improvement over prior art holders  
15 and also the much more complicated prior art system using a plurality of inwardly directed fingers which tend to break off in use after a period of time is avoided. With the present invention, this cannot happen as the whole of the CD holder including the central  
20 hub(s) is vacuum formed in one-piece.

CLAIMS

1. A one-piece vacuum formed plastics CD holder for storing a CD therein, the holder comprising a body having an upstanding hub adapted to fit into the central hole in  
5 the CD, the hub being shaped to flex radially inwardly when a CD is fitted thereon whose central hole has a diameter less than the diameter of the hub.
2. A CD holder according to claim 1 wherein the hub has  
10 a slot formed in it which extends across the whole width thereof.
3. A CD holder according to claim 2 wherein the hub has a second slot formed in it extending across the whole  
15 width thereof and intersecting the first slot.
4. A CD holder according to claims 2 or 3 wherein the or each slot is formed in the hub at 45° to the major axes thereof.  
20
5. A CD holder according to claim 1 wherein the hub is formed with more than two slots in it.
6. A CD holder according to any preceding claim wherein  
25 the side surfaces of the hub are undercut.
7. A CD holder according to claim 1 wherein the two opposed side surfaces facing the slot are undercut to

allow the slot to close during CD removal whereas the undercut gradually reduces to zero on the two other opposed faces of the hub at 90° thereto and in line with the slot.

5

8. A CD holder according to any preceding claim wherein the top circumferential edge of the hub is chamfered to assist in locating the CD thereon.

10 9. A CD holder according to any preceding claim moulded from a high impact polystyrene material.

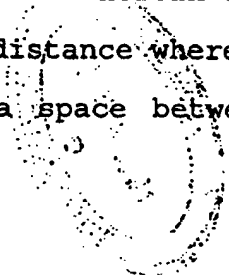
10. A CD holder according to any of claims 1 to 8 moulded from one of PP, PET, HDPE, ABS or PVC.

15

11. A CD holder according to any preceding claim wherein the base is formed with two upstanding hubs thereon for mounting two CD's side by side to each other.

20 12. A CD holder according to claim 11 wherein each hub is surrounded by a CD supporting section which spaces each CD from the base.

25 13. A CD holder according to claim 11 or 12 wherein the hubs are separated from each other by a distance whereby the CD's are housed in the base with a space between their perimeters.



14. A CD holder according to claim 12 wherein the two hubs are spaced apart by a distance whereby the CD's are housed in the base so that their edges overlie each other, the annular CD supporting section around one hub  
5 being slightly thicker or higher above the base than the other.

15. A CD holder substantially as hereinbefore described with reference to the accompanying drawings.

**Amendments to the claims have been filed as follows**

1. A one-piece vacuum formed plastics CD holder for storing a CD therein, the holder comprising a body having an upstanding hub adapted to fit into the central hole in the CD, the side walls of the hub being constructed to flex radially inwardly when a CD having a central hole whose diameter is less than that of the hub is fitted thereto, the hub having two opposed side wall portions which are undercut to an extent which gradually reduces circumferentially around the hub.
2. A CD holder according to claim 1 wherein the hub has a slot formed in it which extends diametrically across the whole width thereof.
3. A CD holder according to claim 2 wherein the slot extends between the two undercut side wall portions of the hub.
4. A CD holder according to claim 2 wherein the hub has a second slot formed in it extending diametrically across the whole width thereof and intersecting the first slot.
5. A CD holder according to claim 1 wherein the hub is formed with more than two slots in it.
6. A CD holder according to any of claims 2-5 wherein the depth of the or each slot is substantially the same

as the height of the hub.

7. A CD holder according to any preceding claim wherein the top circumferential edge of the hub is chamfered to assist in locating the CD thereon.
8. A CD holder according to any preceding claim moulded from a high impact polystyrene material.
9. A CD holder according to any of claims 1 to 8 moulded from one of PP, PET, HDPE, ABS or PVC.
10. A CD holder according to any preceding claim wherein the base is formed with two upstanding hubs thereon for mounting two CD's side by side to each other.
11. A CD holder according to claim 10 wherein each hub is surrounded by a CD supporting section which spaces each CD from the base.
12. A CD holder according to claim 10 or 11 wherein the hubs are separated from each other by a distance whereby the CD's are housed in the base with a space between their perimeters.
13. A CD holder according to claim 11 wherein the two hubs are spaced apart by a distance whereby the CD's are housed in the base so that their edges overlies each



other, the annular CD supporting section around one hub being slightly thicker or higher above the base than the other.

- 5 14. A CD holder substantially as hereinbefore described with reference to the accompanying drawings.



Application No: GB 9608092.4  
Claims searched: 1 to 15

Examiner: Mike Henderson  
Date of search: 4 July 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B8P (PE2C)

Int Cl (Ed.6): B65D G11B 33/04

Other: ONLINE:WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2282797A	(DENNISH LTD) (Fig 1 & P. 3 Lines 28 - 31 particularly relevant)	1,9 & 10
Y	EP 0676763A2	(GRAFICA POZZOLI S p A) (Figs 2 & 3 particularly relevant)	14
X,Y	EP 0503171A1	(SCHWERDTLE & SCHANTZ GmbH) (Figs 2 & 7 particularly relevant)	X:Cl 1 to 4,6,8 & 11 to 13 Y:Cl 14
X	US 4895252	(NOMULA et al) (Figs & corresponding description particularly relevant)	1,6,8 & 10
X	US 4623062	(CHASE et al) (Figs 2 & 3 and Col6 Lines 9 - 20 particularly relevant)	1,6 & 10

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.